

(54) HIGH PURITY PHOSPHORIC ACID AND ITS PRODUCTION

(11) 3-193614 (A) (43) 23.8.1991 (19) JP

(21) Appl. No. 64-329462 (22) 21.12.1989

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(51) Int. Cl⁵. C01B25/234

PURPOSE: To improve purity of phosphoric acid by dipping a specified crystallization tube in phosphoric acid to be a material, to precipitating phosphoric acid hemihydrate on the surface of the tube, taking out of the crystallization tube, and then allowing the hemihydrate to be sweated to remove impurities incorporated in the acid.

CONSTITUTION: The temperature of phosphoric acid to be the material having concn. \geq 70wt.% (expressed by % hereinafter) is controlled at 15-30°C, and a crystallization tube of specified shape through which a coolant such as mixture solution of water/ethyleneglycol is made flow is dipped in the acid to precipitate phosphoric acid hemihydrate on the surface of the tube in a subcooling state at -2 to -8°C. Then the tube is taken out of the phosphoric acid liquid to separate the phosphoric acid hemihydrate from the mother liquid. The hemihydrate is made to be sweated while the fused amt. is controlled to 10-40wt.% to remove impurities incorporated in the inside/outside of the hemihydrate. Further, as necessary, the hemihydrate of phosphoric acid obtained by precipitation with super purity water or high purity phosphoric acid may be substituted and cleaned with super pure water or high purity phosphoric acid to remove impurities. Thus, the obtd. phosphoric acid is in high purity having impurities of \leq 25ppb Fe, \leq 3ppb Mn and \leq 40ppb Na expressed in terms of 85% H₃PO₄ concn.

(54) PRODUCTION OF TETRACALCIUM PHOSPHATE

(11) 3-193615 (A) (43) 23.8.1991 (19) JP

(21) Appl. No. 64-333471 (22) 22.12.1989

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(51) Int. Cl⁵. C01B25/32

PURPOSE: To increase single phase of phosphate by uniformly mixing low-crystallized hydroxyapatite and CaCO₃ with the specified molar fraction of Ca to P and then sintering it.

CONSTITUTION: An aq. solution of Ca(NO₃)₂·4H₂O and aq. solution of (NH₄)₂HPO₄ are compounded by the molar ratio of Ca/P=1.67, and pulverized in wet state to obtain low-crystalline hydroxy apatite. This apatite is then mixed and pulverized with CaCO₃ by the molar ratio of Ca/P=2 in wet or dried state to obtain a uniform powder as a material. This mixed powder is sintered at 1350-1550°C for 5-20 hours to obtain tetracalcium phosphate.